Emotional Disturbances and Quality of Life in Type-1 Diabetic Children and Adolescents: Relation to Glycemic Control and Microvascular Complications

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Abstract

Emotional disturbances, specifically depression and anxiety, constitute a major health problem in type -1 diabetic children and adolescents with marked effect on the quality of life, metabolic control and response to treatment among them. The study aims to study the frequency and severity of depressive and anxiety symptoms and their impact on quality of life in children and adolescent with type-1 diabetes mellitus (DM). The relation of these symptoms to glycemic control and diabetic microvascular complications will be also studied. The present study was conducted on 94 patients with type-1 DM (48 males and 46 females) with a mean age of 12.5 ± 3.8 years attending the Pediatric Diabetes Clinic, Children's Hospital, Ain Shams University. The patients were classified according to the degree of glycemic control (as reflected by glycated hemoglobin: HbA_1C levels) into: well-controlled group (HbA_1C: 6-7.5%), fairly-controlled group (HbA_1C: > 7.5-8.5%) and poorly-controlled group (HbA_1C: > 8.5 %). In addition to full history taking and thorough clinical examination, all patients were assessed using the Pediatric Quality of Life Inventory (Peds QL Generic Core scale) and the Pediatric Quality of Life Diabetes Module scale. Emotional disturbances were assessed using Children's Manifest Anxiety (CMA) scale and Children Depression Inventory (CDI). The poorly controlled group of diabetic patients experienced the worst quality of life and had significantly higher anxiety and depressive symptoms in comparison to the other groups with a positive correlation to disease duration, diabetic microvascular complications and frequency of hospital admission. The well-controlled group with tight glycemic control receiving intensive insulin therapy and kept on frequent home monitoring of blood glucose experienced higher worry and anxiety module scores than the fairly-controlled patients with a subsequent negative impact on the quality of life. The results of the present study indicate the importance of adequate metabolic control of DM and proper care of diabetic microvascular complications for the improvement of psychological well-being and quality of life in diabetic children and adolescents. They also point to the benefits of using an intermediate regime of glycemic control rather than the very tight regime. Regular psychiatric evaluation and psychosocial support of diabetic patients and their parents should be considered and encouraged as an integral part of diabetes care.

Introduction

Type -1 diabetes mellitus (DM) is the most frequent endocrine– metabolic disorder of children and adolescents with important consequences on physical, emotional and social development due to the disease process, treatment schedule and complications ***(Sperling 1997, Johnson and Perwein, 2001)*** The prevalence of type-1 DM among Egyptian school –age children was estimated to be between 1.09/1000 to 2/1000 ***(Ghali et al 1985, Ali et al 1986, Ghali et al 1990, and Salem et al 1990).*** The deleterious impact of type-1

DM on functional health should not be underestimated since poor functional health in children and adolescents with type -1 DM invariably leads to negative clinical and behavioral outcomes ***(American Diabetes Association, 2004)***

The prevalence of emotional disturbances (depression and anxiety) is much higher in diabetic patients than the general population with a marked impact on the control of diabetes and quality of life among these patients ***(Sadock and Sadock, 2003)*** Traditional outcome measures (morbidity and mortality) had been found to be of limited value when assessing the effect of chronic disease like diabetes on physical or psychological status of children and their families, while measures of quality of life (QoL) may provide a comprehensive account of such effect ***(Anderson et al,2003)***.

Health-related quality of life (HRQoL) refers to the physical, psychological and social domains of health that are influenced by a person's experience, beliefs, expectations and perceptions ***(Varni et al 1999, Fayers and Machi,2000).***The HRQoL in children and adolescents with type-1 DM could be influenced by many factors including the disease process, lack of glycemic control, physical complications, frequent hospital admission, complexity of treatment regimens and psychosocial compromise ***(Brown et al 2002 and Varni et al 2003).*** Emotional distress with anxiety and/or depression in type -1 DM may arise from the lack of knowledge about disease itself, the fear and worry of patients and their parents, the strict dietetic programs, the frequent home monitoring of blood glucose, and the intensive insulin therapy aiming for tight glycemic control ***(Hanna and Gutherie 2001, Hahl et al 2002, and Cameron 2003).***

Consequently, the present study was designed to evaluate the emotional status and health–related quality of life in children and adolescents with type -1 DM, and to provide psychological support for these patients and their families accordingly.

Patients and Methods

This randomized study was conducted on 94 patients with type-1 DM (48 boys and 46 girls), aged 6-18 years with mean age of 12.5 ± 3.8 years. They were attending the Pediatric Diabetes Clinic, Children's Hospital, Ain Shams University during the period between January 1st, 2004 till December 31st, 2005. The disease duration ranged from 6 months to 15 years with a mean disease duration of 8.6 ± 5.2 years. The patients were classified into two groups according to disease duration:

Group (A): included 48 patients with disease duration less than 5 years. This group composed of 28 boys and 20 girls with a mean age of 8.4 ± 2.5 years.

Group (B): included 46 patients with disease duration equal to, or more than 5 years. This group composed of 20 boys and 26 girls with a mean age of 14.2 ± 4.8 years.

The patients were further classified according to the degree of glycemic control as reflected by the mean glycosylated hemoglobin (HbA_1C) levels into:

Group I: included 24 patients with good glycemic control (mean HbA_1C was 6.0 – 7.5% during the period of the study). This group comprised 14 boys and 10 girls a mean age of 10.2 ± 4.6 years.

Group II: included 32 patients with fair glycemic control (mean HbA_1C was > 7.5 – 8.5%). This group comprised 14 boys and 18 girls with a mean age of 11.9 ± 3.5 years.

Group III: included 38 patients with poor glycemic control (mean HbA_1C was above 8.5 %). This group included 20 boys and 18 girls with a mean age of 13.2 ± 3.8 years.

Patients who had, in addition to DM, another chronic disease which may affect the quality of life as rheumatic heart disease, bronchial asthma or chronic blood disease were excluded.

All patients were subjected to:

Comprehensive history taking with particular emphasis on the age, duration of illness, dose and regimen of insulin therapy, frequency of hospital admission, number of hypoglycemic attacks or diabetic ketoacidosis (DKA) during the last year, and socioeconomic history (number of family members, job of the parents, degree of education, housing condition, income and resources).

Thorough physical and neurological examination including weight, height, body mass index (BMI), sites of insulin injection, chest, cardiac and abdominal examination. Full neurological assessment to exclude peripheral neuropathy was also included.

Laboratory investigations: to assess the degree glycemic control and diabetic complications:

Glycosylated hemoglobin (HbA_1C): Determination of the mean HbA_1C was measured as a reflection of long –term glycemic control over the preceding 10-12 weeks. High performance liquid chromatography (HPLC) using Globin Chain Analyser supplied by Bio-Rad Diagnostic Group was used for determination of HbA_1C every 12 weeks. Glycemic control in relation to HbA_1C was considered to be optimal (good) if HbA_1C is 6-7.5% suboptimal (fair) if HbA_1C is >7.5-8.5% and high risk (poor) if HbA_1C > 8.5% of adult Hb ***(ISPAD, 2000).***

Quantitative determination of urinary albumin excretion rate (Test of Microalbuminuria): Timed-overnight urine sample was collected by the patient in a plain container and taken to the hospital at the morning. Part of the fresh sample was examined to exclude urinary tract infection and overt proteinuria. Urinary albumin excretion (UAE) was assessed using the quantitative immune turbidimetric assay, and the test was repeated on three occasions one-month apart. Microalbuminuria (as an indicator of diabetic nephropathy) was defined as when two out of three samples showed an albumin excretion of 30-300ug/mg creatinine ***(ISPAD, 2000).***

Fundus examination was routinely done every 6 months to exclude diabetic retinopathy for all patients. Patients with suspected retinopathy were subjected to fundus photography to confirm diagnosis.

Quality of Life Assessment:

Assessment of health-related quality of life (HRQoL) was performed using the ***Pediatric Quality of Life Inventory Version 4.0 (Peds QL Generic Core Scale)***. It is a brief standardized assessment instrument developed by *Varni et al., 1999*. The Peds QL Generic Core scale systematically assesses patient's and parents' perception of HRQoL in pediatric patients with chronic health condition. It includes a physical summary scale (items assessing the child's functional status in activities of daily living) and psychosocial

summary scale (sum of emotional, social and school scales). Emotional scale assesses the child's emotional distress; social scale assesses interpersonal functioning in peer relations, while school scale assesses problems with cognitive performance and school attendance. The sum of the physical summary scale and the psychosocial summary scale is the total score.

The Pediatric Quality of Life Inventory Diabetes Module Version 3.0 (Peds QL Diabetes Diabetes Module) contains 4 modules: diabetes mellitus symptoms module, treatment anxiety module, worries module and communication module according to ***Varni et al., 2003.*** The sum of the four scales in the Peds QL Generic Core scale constitutes the total score. Each items has scores ranging from 0-4 (0 = It is never a problem, 1 = It is almost never a problem, 2 = It is sometimes a problem, 3 = It is often a problem, and 4 = It is almost always a problem). The higher the score, the poorer quality of life. Both inventories were translated into Arabic with blind back translation to English and the Arabic version was used.

Assessment of Emotional Status:

Emotional disturbances, specifically anxiety and depression, were assessed using Children's Manifest Anxiety (CMA) scale and Children Depression Inventory (CDI) for children above the age of 7 years. The CMA scale was designed by ***Abdel Hamid and El-Nail, 1991*** as an Arabic version derived from the children's manifest anxiety scale. This is a child self report measure that assesses symptoms of anxiety consisting of 36 statements with a total score of 0-36. The cut-off point of the scale is 18, where above 18, the child is considered to have high anxiety state.

On the other hand the Children Depression Inventory (CDI) was designed by ***Abdel Fatah(1989).*** It is an Arabic version developed from the children's manifest depression scale by *Maria Kovacas,* which was adapted from the well-known adult scale (The Beck Depression Inventory). The CDI is a 27 item –self report measure of mood symptoms in children.

Statistical Methods:

Analysis of data was done by IBM computer using SPSS (Statistical Program for Social Science) for chi-square test, unpaired t-test, correlation coefficient test and multi-variant analysis (linear regression). P value>0.05 was non-significant, *P<0.05 was significant, and **P<0.01 was highly significant.

Results

Table (1): Presents the main clinical and laboratory data of the studied patients and frequency of long-term diabetic complications. Diabetic retinopathy and neuropathy were diagnosed only in long-standing (group B) patients, while none of recently diagnosed patients experienced any of these complications. The mean glycosylated hemoglobin (HbA_1C) was significantly elevated in group (B) patients denoting poor glycemic control among the long standing diabetic patients. The test for microalbuminuria was repeatedly positive in 26% of group (B) patients compared to only 4.16% in group (A) indicating a significantly higher incidence of early nephropathy in long –standing diabetic patients.

Table (2) shows than 10 out of 14 patients with diabetic nephropathy (71.4%), as diagnosed by persistent microalbuminuria, were included among the poorly controlled group ($HbA_1C > 8.5\%$), and five of patients

with diabetic neuropathy and retinopathy (62.5% and 71.4% respectively) experienced poor diabetic control denoting a significant increase of diabetic microvascular complications in group III (poorly controlled) diabetic patients.

Table (3) shows a comparison between the three studied groups (according to the degree of glycemic control) regarding the scores of Peds QL Generic Core scale. It shows a significantly higher physical summary scale and emotional scale among group III patients (poorly-controlled) diabetic children denoting the worst quality of life, while the lowest mean score (best quality of life) was noticed in group II of them. The school performance scale was markedly increased (denoting a poor school performance) in group III followed by group I of patients. There was also a statistically highly significant difference between the studied groups regarding the psychosocial summary scale with the lowest mean (best quality of life) noticed in group II (fairly-controlled) diabetic patients. The total score was significantly elevated with a poor overall quality of life in group III (poorly-controlled) diabetic patients.

Table (4) shows that patients with poor glycemic control and diabetic microvascular complications, particularly those with longer disease duration, had the worst quality of life.

Table (5) shows a comparison between the three studied groups regarding the Peds QL Diabetic Module. The highest mean of diabetes symptoms module (worst quality of life) was noticed among group III (poorly-controlled) diabetic patients, while the treatment anxiety module was markedly elevated in group I patients with strict glycemic control. There was also a highly significant difference between the studied groups regarding the worry module scores with the lowest mean (best quality of life) in group II patients, and the highest mean (worst quality of life) in group III (poorly-controlled) diabetic patients.

Table (6) shows that depression and anxiety were common in our sample. As regards depression, the CDI showed a higher frequency of depression 31.6% in group III compared to 18.2% and 3.6% among groups I and II respectively, and the difference was statistically significant. When the three studied groups were compared as regards the mean scores of CDI, it was found that group III (the poorly-controlled) diabetic children had the highest scores of depression with a statistically significant difference from group II patients who had the lowest scores. The results regarding the presence of anxiety using the CMA revealed also a highly significant statistical difference between the three studied groups with a significantly higher frequency of anxiety (CMA scale > 18) in group III patients (73.3%) followed by group I (33.3%) and lastly group II patients (21.8%).

Table (1): Clinical and laboratory data of the studied patients

Parameter	Group (A) (DM < 5 years)	Group (B) (DM ≥ 5 years)	"p" value	Significance
Number Sex (M/F)	48 28/20 (1.4:1)	46 20/26 (0.77:1)	P > 0.05	Non – significant
Age (years), Mean ± SD	8.4 ± 2.5	14.2 ± 4.8	(t : 4.8) P < 0.001	Highly significant
Disease duration (years) Mean ± SD	2.3 ± 1.2	8.5 ± 3.8	(t: 8.0) P < 0.001	Highly significant
Mean blood glucose Mean ± SD (mg/dl)	180 ± 45.9	201 ± 55.4	t (0.66) P > 0.05	Non – significant
HbA_1C (%) Mean ± SD	8.04 ± 0.96	11.17 ± 3.74	t (2.1) P < 0.05	Significant
S. creatinine Mean ± SD (mg/dl)	0.7 ± 0.21	0.9 ± 0.32	t (1.1) P > 0.05	Non – significant
Creatinine clearance (ml/min/1.73m^2) mean ± SD	61.36 ± 13.57	40.2 ± 10.61	t (4.6) P < 0.01	Significant
Microalbuminuria (Qualitative) + ve test, (%)	2/48 (4.16%)	12/46 (26.08%)	t (8.0) P < 0.001	Highly significant
Diabetic retinopathy (number, %)	0/48 (0.0%)	7/46 (15.2%)		
Diabetic neuropathy (number, %)	0/48 (0.0%)	8/46 (17.4%)		

Table (2): Correlation study between glycemic control (according to HbA_1C) and diabetic microvascular complications

Diabetic Complication	Group	Degree of Glycemic Control			'p' value	Significance
		Good (I) no. = 24	Fair (II) no = 32	Poor (III) no = 38		
		No. (%)	No. (%)	No. (%)		
Nephropathy	- ve	23 (95.8)	29 (90.6)	28 (73.7)	P < 0.001	Highly significant
	+ ve	1 (4.2)	3 (9.4)	10 (26.3)		
Retinopathy	- ve	23 (95.8)	31 (96.88)	33 (86.84)	P < 0.001	Highly significant
	+ve	1 (4.2)	1 (3.12)	5 (13.16)		
Neuropathy	- ve	23 (95.8)	30 (93.75)	33 (86.84)	P < 0.001	Highly significant
	+ ve	1 (4.2)	2 (6.25)	5 (13.16)		

Table (3) Comparison between the three studied groups as regards the mean scores of Peds QL Generic Core scale version 4.0 (Child Report)

Scale	Mean ± SD	F	P value	Significance
Physical summary scale				
Group I (good control)	9.3 ± 4.3	6.1	0.003**	Highly significant (group II vs. group III)
Group II (fair control)	6.5 ± 4.3			
Group III (poor control)	10.5 ± 5.4			
Emotional scale				
Group I (good control)	7.7 ± 5.0	8.0	0.01* 0.001**	Highly significant (group I vs. group II) (group II vs. group III)
Group II (fair control)	4.1 ± 3.1			
Group III (poor control)	8.6 ± 4.7			
Social scale				
Group I (good control)	7.0 ± 4.7	2.3	0.1	Non significant
Group II (fair control)	4.5 ± 4.1			
Group III (poor control)	6.3 ± 4.6			
School performance scale				
Group I (good control)	6.5 ± 2.3	8.4	0.001**	Highly significant (group I vs. group III) (group II vs. group III)
Group II (fair control)	5.9 ± 3.8			
Group III (poor control)	10.4 ± 3.9			

Table (3) continued:

Scale	Mean ± SD	F	P value	Significance
Psychosocial summary scale				
Group I (good control)	22.0 ± 10.2	7.5	0.001**	Highly significant (group II vs. group III)
Group II (fair control)	15.4 ± 8.8			
Group III (poor control)	24.9 ± 10.4			
Total Score				
Group I (good control)	52.5 ± 14.8	8.3	0.001**	Highly significant (group II vs. group III)
Group II (fair control)	36.4 ± 12.6			
Group III (poor control)	60.7 ± 28.8			

Group I: Good control (HbA_1C: 6-7.5%), Group II: Fair control (HbA_1C:> 7.5- 8.5%), Group III: Poor control (HbA_1C > 8.5%)

****P< 0.05: Significant, ** P< 0.01: Highly significant P> 0.05: non significant***

Table (4): Correlation study between the total scores of Peds QL Generic Core scale and disease duration, diabetic microvascular complications and glycemic control

Parameter	Number (%)	Total Peds QL Score mean ± SD	'p' value	Significance
Sex Male	48 (51 %)	38.6 ± 22.4	> 0.05	Non- significant
Female	46 (49%)	44.8 ± 26.2		
Disease Duration				
< 5 years	48 (51%)	24.8 ± 19.2	< 0.001	Highly significant
≥ 5 years	46 (49%)	62.4 ± 38.6		
Glycemic control				
Good (group I)	24 (25.5%)	52.5 ± 14.8	< 0.001	Highly significant (Group II vs. III)
Fair (group II)	32 (34.0%)	36.4 ± 12.6		
Poor (group III)	38 (40.5%)	60.7 ± 28.8		
Nephropathy				
- ve	80 (14.9%)	36.4 ± 18.5	< 0.001	Highly significant
+ ve	14 (85.1%)	72.8 ± 26.3		
Retinopathy				
- ve	87 (92.55%)	38.1 ± 20.4	< 0.001	Highly significant
+ ve	7 (7.45%)	81.6 ± 22.8		
Neuropathy				
- ve	86 (91.5%)	37.2 ± 21.5	< 0.001	Highly significant
+ ve	8 (8.5%)	82.8 ± 28.9		

Table (5): Comparison between the three studied groups as regards the Peds QL Diabetes Module

Module Scale	Mean ± SD	F	P value	Significance
Diabetes symptoms module				
Group I (good control)	17.5 ± 9.2	3.8	0.02*	Significant (Group II vs. Group III)
Group II (fair control)	16.6 ± 7.2			
Group III (poor control)	21.1 ± 6.6			
Treatment anxiety module				
Group I (good control)	16.0 ± 8.2	5.8	0.01**	Highly significant (Group I vs. Group II)
Group II (fair control)	4.7 ± 3.1			
Group III (poor control)	8.6 ± 4.7			
Worry module				
Group I (good control)	7.3 ± 4.3	6.5	0.002**	Highly significant (Group I vs. Group II) (Group II vs. Group III)
Group II (fair control)	4.0 ± 3.7			
Group III (poor control)	8.9 ± 3.7			
Communications module				
Group I (good control)	6.5 ± 3.3	1.6	0.2	Non - significant
Group II (fair control)	5.7 ± 3.5			
Group III (poor control)	7.3 ± 4.4			

Table (6): The Child Depression Inventory (CDI) scores and Children Manifest Anxiety (CMA) in the studied groups

Children Depression Inventory (CDI) scores						
Group	**Mean ± SD**		**F**	**P value**	**Significance**	
Group I (good control)	9.0 ± 5.3		3.8	0.04*	Significant (Group II vs. III)	
Group II (fair control)	8.4 ± 4.2					
Group III (poor control)	12.2 ± 6.9					
Child Manifest Anxiety (CMA) scale						
Group	**Anxiety (+ ve > 18)**		**No anxiety (-ve ≤ 18)**		**X^2**	**P value**
	No.	**%**	**No.**	**%**		
Group I (good control)	8	33.3%	16	66.7%	14.3	0.001** Highly significant (Group I vs. III) (Group II. vs III)
Group II (fair control)	7	21.8 %	25	78.2%		
Group III (poor control)	28	73.7%	10	26.3%		

Discussion:

In this study, we attempted to assess health-related quality of life (HRQoL) and emotional disturbances in children and adolescents with type -1 diabetes mellitus (DM). The relation of HRQoL and emotional disturbances to glycemic control and microvascular diabetic complications was also studied. Patients of the present study were divided according to the degree of glycemic control (as reflected by HbA_1C levels) into well controlled (group I), fairly controlled (group II) and poorly controlled (group III) patients. Two scoring systems (the Peds QL Generic Core Scale and Peds QL Diabetes Module) were used as a comparative measure of quality of life among the three studied groups. The frequency and severity of anxiety and depressive symptoms were also studied and analysed using Children's Manifest Anxiety (CMA) Scale and Children Depression Inventory (CDI) respectively.

The results of the Peds QL Generic Core Scale revealed that the poorly controlled (group III) patients had the highest total score and thus, they experienced the worst quality of life, while the fairly controlled (group II) patients experienced the best quality of life, followed by the well controlled (group I) patients. Analysis of the subitems of the scale (physical, emotional, school performance and psychosocial summary scale) revealed similar significant higher scales in group III patients denoting marked impairment of quality of life through its all domains. Similarly, the results of the Peds QL Diabetes Module showed significantly higher scores (the worst quality of life) in the poorly controlled patients particularly for the worry module and diabetes symptoms module followed by the well controlled group.

In agreement with these Findings, *Wikby et al, 1993, Wikbald et al., 1996 Cameron et al., 2003 and Wagner, 2004* found that patients with poorly controlled DM had their physical and mental health lower than patients with good metabolic control. They added that patients with acceptable glycemic control without tight or strict dietetic restrictions experienced the best quality of life and least emotional disturbances, a similar result to that of the present study. The poor quality of life and more emotional disturbances in patients with poor glycemic control could be attributed to more frequent hospital admissions, shifting to more intensive insulin regimens as an attempt to correct underlying metabolic derangement, and the higher frequency of microvascular complications (nephropathy, retinopathy and neuropathy) in patients with poorly controlled diabetes. In a recent study done by *Salem et al, 2003* describing the impact of glycemic control on the quality of life in diabetic children and adolescents, they also found that the poorly controlled group experienced the worst quality of life, while the fairly controlled group had the best scores.

The finding that patients with well-controlled DM in the present study rated their quality of life poorer than the fairly controlled group with more emotional disturbances could be attributed to the use of more intensive insulin therapy with marked dietary restrictions which diminishes the possibility to act spontaneously. The frequent home testing for blood glucose and the repeated occurrence of hypoglycemic episodes with

intensive therapy will make the patient feels helpless and in need of others to deal with these events *(Cameron et al.,2003 Hahl et al., 20002 and Salem et al 2003)*.

Longer disease duration and presence of diabetic microvascular complications showed a negative impact on the quality of life of the studied patients (affecting both Peds QL Generic Core Scale and Peds QL Diabetes Module) with more frequent emotional disturbances regarding both anxiety and depression scales in patients with long-term diabetic microvascular complications (nephropathy, retinopathy and neuropathy). This comes in agreement with *Hahl et al., 2002* who studied the quality of life in diabetic Finnish children and adolescents, and its relations to age, sex, disease duration, glycemic control and long-term microvascular complications. They described a negative influence of increasing age and disease duration on the quality of life. Moreover, they reported that patients with long-term diabetic complication experienced the worst quality of life effecting all its domains (physical, emotional, social, and school performance scales), a similar finding to that of the present study. Another study done by *Cameron et al., 2003* proved that the psychological indices and the general well being were worse with increasing age and longer disease duration, specifically in the prepuberal and pubertal children and adolescents.

Regarding depression and anxiety scales, the present study showed that the poorly controlled diabetic patients had significant higher incidence of depression and anxiety in comparison to the other two groups. These findings add more strength to the results of the emotional subscale of the Peds QL Generic Core Scale and Peds QL Diabetes Module discussed before. The higher frequency of depression and anxiety in poorly controlled patients would not only add to their poor quality of life, but could make the control of diabetes more problematic as stated by *Andersson et al., 2003***.** Depression and anxiety may lead to the activation of hypothalamic- pituitary-adrenal axis leading to more hyperglycemia and resistance to treatment secondary to the effect of increasing levels of adrenal glucocorticoids which may end in refusal of treatment or non-compliance to therapy. *Laffel et al., 2003* added that the concern about long-term complications, coping with acute complications, and the burden of treatment regimen combine together to affect virtually all psychological domains of life in type -1 diabetic patients**.**

The findings of this study indicate the importance of proper glycemic control in diabetic children and adolescents in order to allow them to have the best quality of life with early detection of diabetic micro-vascular complications which may inversely affect the quality of life. This could be done through a balanced approach aiming for acceptable intermediate control so that, the intensive treatment, strict regime and the dietary restrictions would not affect the quality of life. Moreover, the present study highlights the importance of detecting psychological and emotional disturbances in diabetic children and adolescents with early intervention so as to avoid their impact on the control of diabetes and subsequently, a better quality of life will be achieved.

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اضطرابات الاوتاف والوظائف الحياتية للأطفال والمراهقين المصابين بمرض البول السكري من النوع الأول وعلاقة ذلك باضطرابات السلوك والاعاقات المرتبطة

يهدف هذا البحث إلى دراسة اضطرابات العاطفة وتأثير ذلك على جودة الحياة في الأطفال المصابين بمرض البول السكري من النوع الأول . كما استهدف البحث دراسة التأثير المحتمل لدرجة انضباط السكر بالدم ووجود مضاعفات مرضية مثل اعتلال الكلى السكري واعتلال شبكية العين والتهاب الأعصاب الطرفية على مدى جودة الحياة في هؤلاء المرضى حيث تم إجراء البحث على ٩٤ مريضاً مصاباً بمرض البول السكري من النوع الأول تتراوح أعمارهم بين ٨ سنوات وحتى ١٨ سنة من المترددين على عيادة السكر التخصصية بمستشفى الأطفال – جامعة عين شمس. وقد تم تقييم المرضى بجانب الفحص الإكلينيكي الشامل وذلك بعمل نسبة الهيموجلوبين المسكر بالدم وقياس نسبة الزلال المجهري بالبول (كدلالة على اعتلال الكلى) وفحص قاع العين واختبار الأعصاب الطرفية كما تم استخدام مقاييس جودة الحياة والقلق والإكتئاب لهؤلاء المرضى بواسطة استبيانات نفسية خاصة . وقد أثبتت الدراسة انخفاض مستوى جودة الحياة والارتفاع الملحوظ في نسبة الإصابة بالقلق والإكتئاب بين المرضى الذين يعانون من ارتفاع ملحوظ في مستوى الهيموجلوبين

المسكر بالدم كمؤشر على عدم التحكم الجيد في نسبة السكر بين هؤلاء المرضى وكان ذلك أكثر وضوحاً في المرضى الذين يعانون من مضاعفات المرض المزمنة مثل اعتلال الكلى أو شبكية العين أو التهابات الأعصاب الطرفية . كما وجد أن المرضى ذوي النسبة الجيدة من انضباط السكر بالدم هم الأفضل من حيث مستوى جودة الحياة مع الانخفاض الملحوظ في نسبة الإصابة بالقلق والإكتئاب مقارنة بمن يتمتعون بدرجة انضباط عالية ويخضعون لعمل تحاليل منزلية متكررة لضبط نسبة السكر بالدم ويمتنعون عن تناول الكثير من الأغذية المفضلة لديهم . وهذا يعطي انطباعاً بأن العلاج المكثف والذي يصاحبه دائماً تحاليل منزلية متكررة وإتباع قيود غذائية ربما يكون له أثيراً سلبياً على جودة الحياة وزيادة معدلات الإصابة بالقلق والإكتئاب كما خاص البحث إلى أهمية تقييم الجانب النفسي لهؤلاء المرضى ومساعدتهم على التعامل مع هذه الإضطرابات النفسية وذلك كجزء تكميلي في منظومة العلاج لمرضى البول السكري من النوع الأول .